

Fundamental Principles of Health

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CANCER AND THE RADIANT RAYS.

It is exceedingly difficult for most of us to grasp offhand a clear understanding of anything we cannot see with our own eyes, hold in our hands, touch, taste, smell or hear; but with a very little effort we can achieve the seemingly impossible and secure an understanding of phenomena beyond the reach of our personal senses. And this is well worth while because a comprehension of natural forces enables us to live sane, wholesome and therefore happy lives.

An emanation is anything flowing or radiating out from something. For example, we speak of light emanating or radiating from the sun. In the evolution of our modern views of the constitution of matter the study of the radiations has furnished some of the most significant clews in connection with both the undulatory or wave radiations of which light is the characteristic example, and also of the corpuscular radiations, which are proved beyond all question to consist of particles of matter or electricity. These particles are proved to be traveling at speeds varying from one millimeter a second to approximately the velocity of light, which is as we all know, 186,000 miles a second.

When ordinary bodies are heated to about 500 degrees Centigrade (932 degrees Fahrenheit) they begin to emit visible light, no matter what the substance may be, and the radiations appear to be due to this definite temperature and are referred to as temperature radiations. But in certain cases light is found to be emitted at a temperature far below that at which temperature radiations set in, and these phenomena we know as luminescence, phosphorescence and the like—light without heat, we call it. But one and all are due to the interchange of some form of energy and most of it is beyond the border line of our ability to perceive without external assistance to our limited senses.

Light wave radiations are propagated exactly like waves in water or sound in air, without the transfer of any matter along the path of propagation, but corpuscular radiations consist of streams of fine particles projected at various degrees of high velocities and may, perhaps, best be illustrated by imaging a stream of fine gravel. Probably all are familiar with the sand blast and how it will cut away the hardest surface and not injure the softest fabric. There is a close relationship between the two types of radiation, just as there is between the air and the sand, and the principals involved are undoubtedly those which will be found to account for the many marvelous effects of both the direct and indirect sunlight on human diseases and on life in general.

We have noted the effects of direct sunlight in a general way and now come to the matter of indirect sunlight, for we should not for a minute forget that all forms of energy on this earth are but converted sun energy. But before considering the subject of radiations in general perhaps it would be best to survey very briefly the field of their application to our needs in order to get the connection and show that the matter is worth considering.

Shortly after the X-rays were discovered it was found that they exerted a destructive influence on living tissues, which became more marked the longer animal structures were exposed to them, and immediately it was suggested that here we had the long hoped for remedy for the destruction of cancer. But soon it was learned that it was a very dangerous power. In Germany a few careful, conscientious workers have very persistently developed the technique and apparatus, as all human experience proves must be done in every department, and have slowly evolved a method that is showing most encouraging results in cancerous conditions and in some forms of sepsis.

Kroenig's clinic at Freiburg is equipped with modern apparatus and with some 1,700 milligrams of mesothorium and radium. Mesothorium is some 300 times as concentrated as radium, but gives similar results in shorter time. At the clinic, where for cancer only a slight operation is required, the operation is performed and then the ray is used; where a severe operation ordinarily would be required the ray alone is employed.

Results had in these cases were considered not due to any bactericidal action that the ray may possess, but rather to a change in the blood itself, which makes it untenable to these bacteria. It is considered to bear out the vaccination theory of the X ray, this being that there is a rapid manufacture of the antibodies. This theory and these results are exceedingly suggestive in connection with the results we have recently considered from the use of the direct rays of the sun in the matter of surgical tuberculosis cases and of heliotherapy in general.

THE X-RAY.

The discovery of the X-ray burst upon the world without the slightest warning and completely astounded even the most astute and learned scientists of the time. But we can now see that it was the perfectly logical sequence of a long series of discoveries, following numberless experiments by many individuals with a scientific toy known as the Geissler tube. Geissler had demonstrated the peculiar behavior of electric discharges through different gases confined in a sealed tube and under various degrees of vacuum, whereby the spark became a more or less steady stream.

Following Geissler, Sir William Crookes became the chief investigator along these lines, and by means of miniature wind-wheels and turbines in his improved tubes, now known as Crookes tubes, demonstrated that the current of electricity flowing from the negative pole and known as the cathode stream could be transformed into kinetic energy. "Radiant matter" was the term used by Crookes to describe the highly rarefied gas, or "ultra gaseous matter," which he found to produce certain peculiar mechanical and luminous effects when a charge of high potential electricity was passed through it.

As with all new thoughts, the idea was fiercely attacked by many of the scientific men of the time, who strenuously argued against it and endeavored to prove that both the theory and the demonstrations amounted to nothing. But a few choice spirits pressed on.

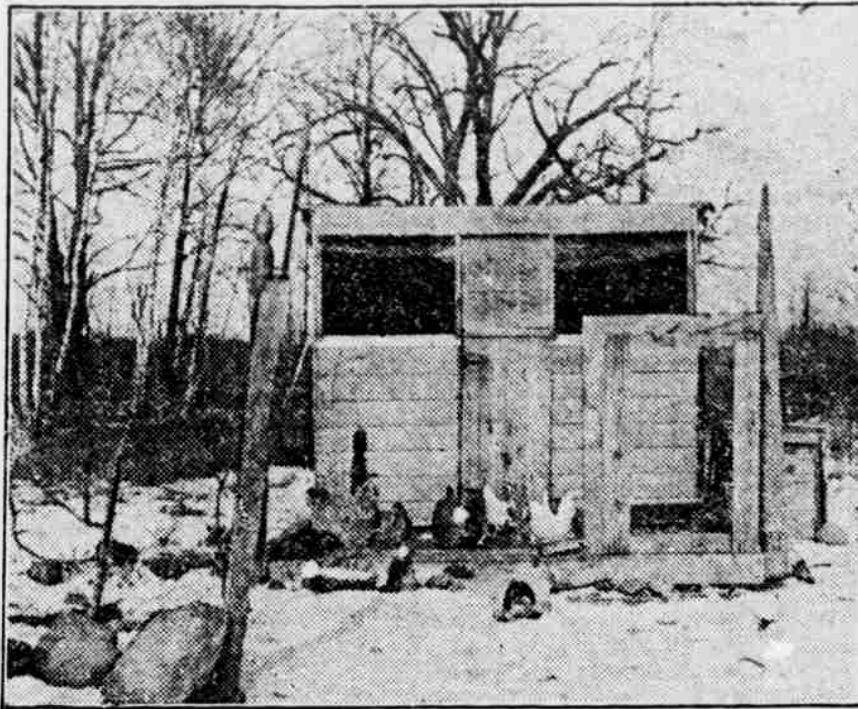
Lenard demonstrated that the cathode stream could be detected outside the tube as well as within it and that it could be deflected or attracted by a magnet. A professor of physics in the University of Wurzburg, in Bavaria, W. K. Roentgen, noted in 1895 that substances such as potassium platino-cyanide became luminous when brought near to a tube exhausted to a vacuum so that the glass was brightly phosphorescent. About this time also he noticed that a large number of photographic plates placed within range of a Crookes tube with which he was experimenting were fogged, although they were simply protected from light by the usual light-tight plate holders, and he began to suspect a connection between the two phenomena. A few more experiments and the idea crystallized—he viewed his own bones through the flesh of his hand and knowledge of the new ray was born November 8, 1895.

Because the ray which produced fluorescence showed him the bones in the living human body, affected photographic plates while inclosed in light-tight boxes and could not be reflected, refracted nor deflected by a magnet, Roentgen knew that he had discovered a new and unbroken ray and he therefore called it the X-ray.

It may be asked how it is possible to distinguish between such radiations of different wave lengths. This is achieved through demonstrating by means of photography, or a fluorescent screen, or the electro-scope, the "penetrating power" or "hardness" of the short wave emanations after traversing various thicknesses of a medium which absorbs X-rays, such as, for example, aluminum. The shorter the wave length the "harder" the ray, and the "harder" the ray the greater its penetrating power. Soddy has demonstrated the penetration of one-half inch steel. This discovery of the complex character of the X-ray tube emanations and those from radiant substances in general created the need of a system for designating the different rays, and they have therefore been named alpha, beta, gamma from the Greek alphabet corresponding with our a, b and c.

The original X-ray tube shot the rays from the cathode directly against the glass at the opposite end; subsequently a metal target known as the anti-cathode was introduced to receive the rays, but the bombardment from the stream of corpuscles or electrons was so intense that the target was soon raised to a white heat, and it would become necessary to stop the action. For these and other reasons which we will discover later radium with its gamma rays seemed to offer certain advantages over the X-ray tube, but recently Dessauer of Frankfurt-on-Main has perfected a tube by which he can produce rays practically identical with the gamma ray from radium or mesothorium, the ratio of hardness being as 1 to 1.2. These results were obtained by employing a special and highly efficient water cooling device in the anti-cathode.

CLEANLINESS PAYS IN POULTRY BUSINESS



Chicken House Should Not Be Placed in an Unprotected Part of the Yard—The Chickens Must Have More Shelter in the Winter.

Roup is a menace to the chicken business; lice suck your profits from the laying hens and the growing cockerels and cholera wipes out a whole year's profits in a week or two. Yet, none of these enemies are quite so dangerous as the musty, frowzy, ill-smelling, dirty henhouse, because dirt is the beginning and end of disease.

A clean henhouse is an insurance against fowl disorders, says an Indiana writer in Farm Progress. Many of us sort of grow accustomed to dirt. It grows on us and the first thing we know it has become so familiar, so much a part of the everyday surroundings that we simply pass it by. We simply become unable to perceive dirt when it is all around us. We put off the cleaning-up process a little too long and the first thing we know we have millions of lice or an epidemic of cholera in the flock.

Where the chicken house is to be cleaned once a week in winter it will require three times as much attention in hot weather. The piles or droppings will decompose in the heat and the interior of the building will be well nigh unbearable to the birds. They are forced to breathe and live in an atmosphere created by their own filth and unless the building is very open the evidences of such a condition can soon be seen in the appearance of the flock.

Cleanliness pays, not only in freedom from disease, but in increased production. It will take time to free the chicken house and the yards free from filth, but it is something that must be promptly attended to in summer especially.

I have seen some henhouse floors that were a mass of manure, feathers, sand, ashes, chaff and dirt. The hens

were alive with lice and were dying off nightly from one disease or another.

They were being kept at a loss, and that loss must have grown heavier the longer they were kept. The owner complained that there was nothing in the chicken business. No wonder!

Dirty houses are the cause of many hens leaving them in summer and taking to the other farm buildings, the trees and even to the fenceposts as roosting places. They rarely go back to the house when they have once left it, and this leads directly to losses by night birds, prowling animals and casual chicken thieves. It is better to keep the house as clean as possible, and by doing this insure the roosting of the birds on their accustomed perches.

"Lumber neck" is a very fatal disease that flourishes in warm weather around the dirty chicken house or the yards that are carelessly kept. Leaving a decaying carcass around where the chickens can find it is the surest way of killing off a bunch of them by means of this disease. The green fly, the larvae of that fly and the dead carcass are all that is necessary to get the epidemic well started.

The fly lays the eggs, the egg or the larvae are eaten by the birds and the cases of "lumber neck" develop with certainty and dispatch. Every bird that dies from any cause at any time should be burned, but this is doubly true in hot weather. When you consider the number of dead hens, little chicks and the offal from dressed chickens thrown in a fence corner or tossed into the weeds where the remainder of the flock can get at them, you wonder that every chicken is not dead of "lumber neck" on some farms.

SELECTION OF BEST LAYERS

Trapnesting is Best Method Known, But Not Practicable Where Large Flocks Are Kept.

While trapnesting is the best method known of selecting the best layers and building up a laying strain, it is hardly practicable to use it in a large flock, unless a goodly number of nests are provided and one person can give a large amount of time to attending them and recording results.

It is better and cheaper to buy male birds from trapnested stock and to begin the work of sorting out the drones by disposing of every pullet in the fall that has not begun to lay within a few weeks of the time the first ones began laying. The non-laying pullets are easily detected by their undeveloped combs, and their separation from the flock is a simple matter at this stage.

Every pullet that is worth keeping for the production of a laying flock should be laying by the time she is eight months old at the latest. Sort out the others relentlessly and give the good ones all the room and feed through the winter. If it is possible to have a separate house for them, by all means do so, for they cannot do their best when "bossed" and driven by older hens during the weather when they must be shut in.

In the spring keep the best of these pullets yarded with your new male bird that has been guaranteed to be from a high-producing mother, and hatch these eggs early—in March and April if possible. Give the chicks plenty of room and good care until they begin to mature, then go through the culling-out process again, culling out this time all pullets that are not laying by the time they are seven months old at the latest. Pay no attention to their breeding or their other good points. Get rid of the drones and give your attention to the others. Keep this up and you will have a flock of layers.

WINTER FEED FOR THE HENS

Almost Any Cover Crop Will Answer, But There is Nothing So Easily Produced as Rye.

Some kind of green food is necessary for the hens in winter, and sometimes it is a little difficult to know just how to provide it. Blue-grass pasture usually affords green grass almost all winter, but not all of us can have a good large blue-grass range.

Most everyone who has hens has a garden that they can use for providing green for them. Not only do you get value from your garden in the winter when it would be lying idle otherwise, but you are benefiting the soil at the same time. Almost any winter-growing cover crop will answer, but there is nothing so easily produced or that provides green so quickly as rye. In the spring it will make a mass of foliage to be plowed under to enrich the soil and place it in a splendid mechanical condition. When you plow for the rye do not make the seed bed level, but leave it as rough as you can. This will cause it to gather the rain and hold it, and in the spring the soil will have stored a good supply against the summer droughts.

Remove All Weak Fowls.

Remove from the breeding flock all birds that show signs of weakness or lack of inherited vitality. Such birds are also unprofitable for meat and should be disposed of early in their lives.

Keep a Supply of Dust.

Do not fail to keep the hens supplied with a box of dust. Place it where the sun's rays will strike it and watch them enjoy getting it among their feathers. It ought to be renewed at least every week.

Kill Deformed Chicks.

All deformed chicks should be killed as soon as hatched. It is a waste of time to try to raise them.

The manufacture of fuel briquettes from sawdust, shavings and naphthalene is a new Colorado industry.

Wash day is smile day if you use Red Cross Ball Blue. American made, therefore the best made. Adv.

When on the Back Fence.
"Do you cultivate the tragic voice?"
"No; I shy my bootjack at 'em."
Baltimore American.

YOUR OWN DRUGGIST WILL TELL YOU
Try Murine Eye Remedy for Red, Weak, Watery Eyes and Granulated Eyelids. No Smarting—Just Eye Comfort. Write for Book of the Eye by mail Free. Murine Eye Remedy Co., Chicago.

An Unconquerable Pleasure.
"Are you in Washington on business?"
"Partly on business and partly on pleasure," replied the visitor. "I could not conquer my desire to come and see whether the rumors that they've actually got our congressmen hard at work are true."

For Itching, Burning Skins.
Bathe freely the affected surface with Cuticura Soap and hot water. Dry without irritation and apply Cuticura Ointment with finger or hand. This treatment affords immediate relief, permits rest and sleep and points to speedy healing in most cases of eczemas, rashes, itchings and irritations of the skin and scalp of infants, children and adults. Free sample each with 32-p. Skin Book if you wish. Address post-card: Cuticura, Dept. X, Boston. Sold everywhere.—Adv.

A Doubtful Question.
He (feeling his way)—Would you get married if you were me?
She—I don't believe I could—if I were you.

It All Depends.
"I see by the papers," remarked Miss Gidysuri, "that pugilists fight in a ring. What kind of a ring is it?"
"For sparring an engagement ring is used," explained the old bachelor, "but when it is to be a fight to a finish a wedding ring is used, I believe."

Caught.
"What a pretty hat Mrs. Pinkey wore this evening."
"Did you like it, dear?"
"Yes, it was very becoming. Why don't you get hats like that?"
"You mustn't blame me if I laugh, John. The hat you like is my hat. Mrs. Pinkey borrowed it this evening. It's the \$30 hat you called a fright."

His Bones Gave Way.
Eighteen hours under 25 feet of stone and dirt proved too much for the bones of William Chapman of Wheat Sheaf, Pa., the other day. Chapman was caught near the bottom of the well he was cleaning out on his place, when the walls collapsed when he started to climb out. The stones arched over his head and held back the dirt. He was able to talk with his rescuers through the pump log. He conversed with his wife and children through the tube, but when the last earth was taken from his head and the men started pumping oxygen into his lungs, he collapsed. It was found his bones had given way under the strain.

MESMERIZED Poisonous Drug Still Freely Used.

Many people are brought up to believe that coffee is a necessity of life, and the strong hold that the drug, caffeine, in coffee has on the system makes it hard to loosen its grip even when one realizes its injurious effects.

A lady writes: "I had used coffee for years; it seemed one of the necessities of life. A few months ago my health, which had been slowly failing, became more impaired, and I knew that unless relief came from some source I would soon be a physical wreck."

"I was weak and nervous, had sick headaches, no ambition, and felt tired of life. My husband was also losing his health. He was troubled so much with indigestion that at times he could eat only a few mouthfuls."

"Finally we saw Postum advertised and bought a package. I followed directions for making carefully, and added cream, which turned it to the loveliest rich-looking and tasting drink I ever saw served at any table, and we have used Postum ever since. "I gained five pounds in weight in as many weeks, and now feel well and strong in every respect. My headaches have gone, and I am a new woman. My husband's indigestion has left him, and he can now eat anything."

Name given by Postum Co., Battle Creek, Mich. Read "The Road to Wellville," in pkgs.

Postum comes in two forms: Regular Postum—must be well boiled. 15c and 25c packages.

Instant Postum—is a soluble powder. A teaspoonful dissolves quickly in a cup of hot water and, with cream and sugar, makes a delicious beverage instantly. 30c and 50c tins.

The cost per cup of both kinds is about the same.

"There's a Reason" for Postum.

—sold by Grocers.